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**New Directions for Science and Technology in South Africa:  
Opportunities for US Collaboration**

A seminar organized by the AAAS Sub-Saharan Africa Program  
Washington, DC



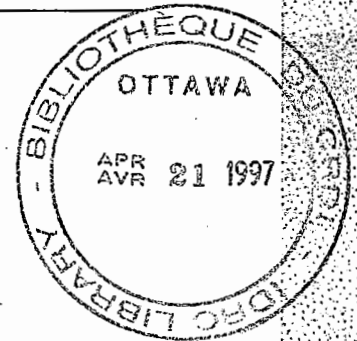
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## Science, Technology, and Public Policy in South Africa

Geoffrey Oldham and  
Brent Herbert-Copley\*



### Introduction

The International Development Research Centre (IDRC) takes great pleasure in participating in this seminar, and being among such a distinguished group of speakers. The Centre views the restructuring of the science and technology (S&T) system as among the most important issues in the overall Reconstruction and Development Programme being implemented by the current South African government, and one where there are key roles for donor agencies to support initiatives now underway. As such, it is extremely timely for the AAAS, with NSF support, to have convened this seminar, in order to promote dialogue between South African and American actors in this field.

Three years ago the Democratic Movement asked IDRC to organize an OECD-style review of S&T policy in South Africa.\*\* IDRC has a long history of support for research in the field of science and technology policy, and via its office in Johannesburg had been establishing a program of research support focused on some of the critical challenges facing the Democratic Movement. This was, of course, two years before the current Government of National Unity came to power. As a result, the review process differed somewhat from the typical OECD review, in which it is the government, rather than an opposition movement, that takes on the role of local organizer and interlocutor for the review.

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\*Note: The opinions expressed in this paper are those of the authors, and do not necessarily represent the views of IDRC.

\*\*The Science and Technology Policy mission was commissioned by the African National Congress (ANC), the Congress of South African Trade Unions (COSATU), and the South African National Civics Organisation (SANCO). The mission itself grew out of discussions following a January 1992 symposium on "The Role of Research in Transforming South Africa," cosponsored by IDRC and the journal *Transformation*.

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Nonetheless, the review did follow the basic outlines of the OECD methodology. A series of background documents on existing S&T policies and institutions was prepared, in this case by independent researchers affiliated with the Democratic Movement. A five-person team of external reviewers was then assembled — three black and two white, three men and two women, each versed in a different field of science and/or science policy\* — and visited South Africa in November 1992. Accompanied by members of the Democratic Movement, they visited most of the government S&T departments and research councils, and met with representatives of universities and the scientific community. At time of the visit, the team was unsure that it would be accorded access to the then-government S&T establishment. In fact, the team was warmly welcomed by most of the government scientists. Scientists found it encouraging that two years before the likely coming to power of the ANC, that organization was taking such an interest in science. The team prepared a summary report, then returned to South Africa for a set of meetings with the government officials and with the ANC and other members of the Democratic Movement (the so-called "confrontation meeting" stage of the OECD methodology).

The results of the mission report and subsequent meetings have since been published by IDRC (1993), and several of the principal conclusions that emerged from the mission have already been mentioned during this seminar. In a sense, however, it almost doesn't matter what was said in the report. The important thing was that the mission was instrumental in helping the two sides — government officials and the Democratic Movement — to begin talking. They continued talking after the team had left, through a joint government-Democratic Movement forum called the "S&T Initiative," which sponsored a series of discussions and background studies on directions for S&T policy in the post-apartheid era. This dialogue helped ensure that, by time of elections, the Democratic Movement had some well-informed views about its S&T policy. As Roger Jardine (National Coordinator of Science and Technology Policy for the ANC) has said, the ANC is probably the only liberation movement in history to have enunciated its own science policy *before* it came to power. This fact reflects not only the thoroughness of the Democratic Movement in its preparations for the transfer of power, but also the critical role of science and technology in furthering the process of reconstruction and development in South Africa.

This presentation is not intended to review in detail the mission's conclusions. Instead, it focuses on just one small but important element of what the team observed on its mission two and one-half years ago to South Africa. This is the issue of building an analytical base for the design and implementation of S&T policy. The IDRC mission noted two critical challenges in this regard: on the one hand, supporting the develop-

\* The external team was chaired by Mr. James Mullin (Canada). Other members were Dr. Deanna Ashley (Jamaica); Dr. Lydia Makhubu (Swaziland); Dr. Thomas Odhiambo (Kenya); and Prof. Geoffrey Oldham (United Kingdom). The South African participants were as follows: Dr. Ivy Matsepe-Casaburri (Education Trust for South Africa); Dr. Jairam Reddy (University of Durban-Westville); Dr. Jakes Gerwel (University of Western Cape); Dr. Frene Ginwala (ANC); Dr. David Kaplan (University of Cape Town); and Dr. Stanley Sangweni (University of Natal).

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ment of an independent, indigenous S&T policy research capacity in the country; and, on the other hand, finding practical and cost-effective ways for South African decisionmakers to tap into the international stock of knowledge regarding S&T policy (see IDRC, 1993, p. 68-69). These issues were of central importance two years ago as the democratic movement was developing its internal policy positions. And, if anything, they are even more important now as the government moves toward the drafting of an S&T White Paper in the year ahead.

### Nurturing Independent Centers of Policy Advice

In the first place, the team was struck by the relative lack of capacity within the country to analyze S&T policy issues and to develop policy alternatives on these issues. Certainly, there were pockets of expertise. Within the government, the Foundation for Research Development (FRD) and the Council for Scientific and Industrial Research (CSIR) had small groups of policy analysts working in this field. And several universities, both historically black and historically white, had individuals who were interested in science policy (notably the Universities of Cape Town, Witwatersrand, and the Western Cape). But there were no formal S&T policy research groups in the university community. And nowhere within or outside government was there a critical mass of expertise.

This situation is now changing, albeit slowly. The FRD and CSIR are enhancing their S&T policy groups, and the University of Cape Town is in the process of establishing an S&T policy research center with support from IDRC and other local and foreign donors. Some of the historically black universities (notably the University of Durban-Westville and the University of the Western Cape) also have plans to develop their competence in this area, and have begun to discuss these issues with donor agencies. Given the enormity of the policy challenges facing South Africa and the fragmented nature of existing policy research capability in the country, it is neither likely nor desirable that this field come to be dominated by a single "center of excellence," wherever located. Instead, some form of distributed, networked capacity is called for, linking both public sector and university-based researchers. As the mission report noted, "there should be a network of research groups able to provide a contract research service, and some academic groups who can train both S&T policy analysts and policy researchers" (p. 69).

Developing this kind of policy analysis capability is a task that, in our opinion, would benefit from increased international support. Yet it is also one that could easily be overlooked in the push to launch high-profile programs for scientific and technological collaboration. IDRC's experience in other parts of the world has underscored that strengthening local capacity for research is a complex process, demanding careful planning and perseverance over time. The payoffs are potentially large, but they are also often intangible and/or slow to materialize. And, as with other possible areas of partnership between South Africa and Northern countries, actions in this field must be guided in the first instance by South Africans' own perceptions of their needs, rather than simply by the kinds of resources available from the outside world.

Of course, simply strengthening policy research capacity by no means ensures that this research will feed into government decisions. Independent research centers must work to cultivate a "user-focused" approach to policy research and analysis. And government departments must still work to counteract their own frequent lack of competence — and, at times, enthusiasm — to search out the most appropriate sources of policy advice.

### Tapping into the International "Mainstream"

This challenge in turn reflects the second one outlined above: the problem of tapping into international knowledge concerning S&T policy issues and interpreting this knowledge in the context of South Africa, in order to generate useful policy advice. The IDRC mission was struck by the isolation of the South African scientific community, not only with respect to developments in science and technology in the outside world, but also from the frontier of knowledge about what was happening elsewhere regarding S&T policy. For example, there seemed to be limited understanding of what was known elsewhere about the innovation process or about changing approaches to and attitudes about fostering linkages between universities and industry.

Once again, this situation has begun to change somewhat, and meetings such as this one are indicative of the increasing links between the South African S&T policy community and counterparts outside the country. But problems still exist, particularly in terms of short-term policy analysis and advice. The issue is not just one of accessing knowledge from the North. It is precisely other developing countries that have experience in relating S&T to the problems of poverty. One of South Africa's current challenges is to know how best to utilize what is in effect a "First World" S&T system to address the previously neglected "Third World" problems of South African society. As such, it is important that policymakers are aware of and able to access this developing country knowledge.

Nor is this problem of accessing external knowledge relevant to local problems unique to South Africa. Although the extent of their isolation obviously differs, most decision-makers in public or private sectors around the world are faced with a similar problem. This is equally true for S&T policymakers.

One of the authors of this paper (Geoff Oldham) is currently studying this issue and has been interviewing key S&T policy- and decisionmakers to ascertain how they access knowledge relevant to their decisions. Interviews have been carried out to date in the United Kingdom, Australia, China, and Canada. Despite the variety of circumstances in these countries, some general conclusions are emerging from his interviews that may also have relevance to the South African case:

- Nearly all decisionmakers say they are swamped with information, which they simply cannot digest. Their need is for knowledge, not simply more information.
- Nearly all say they make their decisions on the basis of a very small percentage of knowledge that is relevant to the issues at hand.

- Most believe if they would be better.
- Information needs to be in many ways. But then briefing papers on a "half-hour read" (i.e. countries often have governments and po
- In order to be useful, trusted.

IDRC is exploring the possibilities of these needs. The idea would be to have domains. They would be asked, they would write on the issue. Being a world authority to prepare 10 to 15 pages financially. As a result, or able to refine the research and produce an authoritative

This service could be one of access to international knowledge but one input into the process. The relevance of this knowledge analysis, and to consult with little value. That is why IDRC encourage others to join in Africa, the job of the South

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- Most believe if they could access more relevant knowledge, their decisions would be better.
- Information needs for critical S&T policy decisions can be categorized in many ways. But there is a consensus that a major need is for authoritative briefing papers on a well-defined issue, which could be absorbed in a "half-hour read" (i.e., 10 to 15 pages). Federal government departments in rich countries often have the in-house staff to prepare such papers. State governments and poorer countries typically do not.
- In order to be useful, such briefing papers must be from sources that can be trusted.

IDRC is exploring the possibility of establishing a service that would meet some of these needs. The idea would be to identify world authorities in particular S&T policy domains. They would be invited to be a part of a network and would agree that, when asked, they would write 10 to 15 pages on what they knew about a specific policy issue. Being a world authority on that topic, a member of the network should be able to prepare 10 to 15 pages within a few days and be appropriately compensated financially. As a result, once a policy issue had been identified the service should be able to refine the research needs, identify appropriate individuals within the network, and produce an authoritative briefing paper for the client within three weeks.

This service could be one of the ways in which South African policymakers could get access to international knowledge relevant to their problems. But, at best, it will always be but one input into the policymaking process. Without a local capability to assess the relevance of this knowledge to South African conditions, to carry out policy analysis, and to consult with key stakeholders, the international dimension will be of little value. That is why IDRC is supporting efforts to build that capacity and would encourage others to join us in this endeavor. Without this local capacity in South Africa, the job of the South African decisionmakers will be much more difficult.

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